

ORIGINAL ARTICLE

Personal hygiene among primary school children living in a slum of Kolkata, India

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Key words

Primary school children • Personal hygiene • Maternal literacy • Slum • India

Summary

Introduction and objectives. For children, maintenance of personal hygiene helps to improve the quality of life and longevity. This is of particular importance in a slum community with compromised living situation. This study was undertaken to find out the knowledge and practice of personal hygiene among the primary school children living in a slum area, to identify any misconception among them regarding the maintenance of personal hygiene, to find out their morbidity pattern, and also to elicit the relationship between practice of personal hygiene among the children and the literacy status of their mother.

Methods. A cross-sectional observational study was conducted among 104 primary school children of a primary school situated in the slum area of Chetla, Kolkata, India with the help of a pre-designed, pre-tested and structured questionnaire. Data were analyzed statistically by simple proportions and tests of significance.

Results. It was found that the female students were more knowledgeable than the male students regarding the maintenance of personal hygiene. There was a wide gap between practice and knowledge of personal hygiene among the primary school children living in the slum area. Even, misconceptions do exist on certain indicators of personal hygiene among the students. Statistically significant association was observed between practices of personal hygiene among the primary school children and the literacy status of their mother.

Discussion and conclusions. Future of a society depends considerably on the health of its children. The parents and the school teachers, as constructive shapers of children's health behaviors, should play a responsible role in early education of children on personal hygiene.

Introduction

The foundations of lifelong responsibility for the maintenance of personal hygiene are laid down in childhood, which is important for a healthy childhood, for a healthy adulthood and for the development of positive values about health and the use of health services.

Poor health among school children is resulted from the lack of awareness of the health benefits of personal hygiene. Diarrhoeal diseases, skin diseases, worm infestations and dental diseases are most commonly associated with poor personal hygiene. One of the major problems faced by school children are infections. The primary causes of infections are contaminated water and poor sanitation, as well as poor hygienic practices. Lack of personal hygiene coupled with poor sanitation favor person-to-person transmission of infection. Infection and malnutrition form a vicious circle and retard children's physical development. Repeated attacks of infections often compound the existing poor health of children, compromising children's attendance and performance at school and not uncommonly, can result in death [1]. The condition may even be worse in a slum community with poor socio-economic condition and compromised living situation. The origins of many of the illnesses of adulthood also have their roots in the health behaviors of childhood and adolescence. How-

ever, majority of the childhood illnesses are preventable by promotion of hygienic practices among school children through proper health education by their parents and teachers.

Children in their primary schooling age can learn specific health-promoting behaviors, even if they do not fully understand the connections between illness and behavior [2]. Health habits can be developed in this period. More research on this ground is needed. The present inadequate knowledge base hinders the development of improved strategies for enhancing the maintenance of personal hygiene, which is of great importance to decrease the burden of communicable diseases in the developing countries.

With the above background, this study was undertaken with the following objectives:

- 1) to find out the knowledge and practice of personal hygiene among the primary school children living in a slum area;
- 2) to identify misconceptions among the study population regarding the maintenance of personal hygiene, if any;
- 3) to find out the morbidity pattern of the study population;
- 4) to elicit the relationship between practice of personal hygiene among the primary school children and the literacy status of their mother.

Materials and methods

Type of study. Community based cross-sectional observational study.

Place of study. One purposively selected primary school situated in a slum under the service area of Urban Health Center, Chetla, Kolkata, India.

Duration of study. Two months.

Study population. All primary school children in grades I to V from the selected school, where the students come mainly from the neighboring slum locality.

Study tool. A pre-designed, pre-tested and structured questionnaire.

Methodology. Permission was obtained from the school authority. The questionnaire was drawn up in English, translated in Bengali (local language) and back translated in English to check the translation. Before starting of the study, pre-testing of the questionnaire was done in a different school situated in the same slum locality and accordingly necessary modifications were made and this was finalized. The selected school was visited on a pre-assigned day of each week and one grade was covered every week. There were average of 24-26 students enrolled per grade. The students from each grade who were absent on the specific day of the study were excluded. Thus, after excluding 21 absentees, a total of 104 students were finally included in the study. The response rate was 83.2%. The parents were invited on the specific days of the study. The class teacher of each grade was explained the purpose of the study. Good rapport was built up with the students and informed verbal consent was obtained from them and one of their parents. Briefing was done regarding the questionnaire provided to the students and they were asked to mark the responses. The questionnaire consisted of socio-demographic information, e.g. age, grade, sex, religion, literacy status of both mother and father, questions regarding knowledge and practice of personal hygiene, any misconception regarding personal hygiene, and lastly any illness over last 15 days among the primary school children. The questionnaire covered the following indicators of personal hygiene, i.e. combing hair, studying under adequate light, brushing teeth, washing mouth after eating, washing hands before eating, washing hands after visiting toilet, trimming nails, taking bath daily, wearing shoes and wearing clean clothes. Each student was also observed thoroughly to assess their status of personal hygiene, i.e. cleanliness of clothes, condition (clean and trimmed) of fingernails and toenails, cleanliness of teeth, condition (clean and combed) of hair, presence of shoes, etc. It was found that the observations were consistent with the responses of the students regarding personal hygiene practices. The morbidities listed in the questionnaire were fever with or without cough / cold, diarrhoea, passage of worms in stool, head lice, dental caries, scabies and multiple boils. The students were also examined clinically (general and systemic examinations) for the presence of signs of any illness, mainly to correlate with their reported illnesses. At the end of the study, the parents were given information about their children's status of personal hygiene and related health condition and suggested to contact the urban health center if needed. A brief health education session was also conducted for the class teachers, students and their parents after completion of the study.

Analysis of data. Data obtained were collated and analyzed statistically by simple proportions and tests of significance (Z-test and chi-square test), as and when necessary.

Results

This study shows that the age of primary school children ranged from 5 to 14 years, maximum number (84) of students (80.77%) being between 7 to 12 years. Among 104 students, male and female students were 43 (41.35%) and 61 (58.65%), respectively. Maximum students (76) were Hindus (73.08%) and rests (28) were Muslims (26.92%). Estimates of maternal and paternal literacy were 31.73% (33 out of 104 mothers) and 69.23% (72 out of 104 fathers), respectively.

Tab. I. Distribution of students according to practice and knowledge of personal hygiene (n = 104).

Personal hygiene	Male (n ₁ = 43)	Female (n ₂ = 61)	Hindu (n _{c1} = 76)	Muslim (n _{c2} = 28)	Total (104)
Practice (score)					
Poor (< 8)	7 (16.28)	12 (19.67)	11 (14.47)	8 (28.57)	19 (18.27)
Good (8-12)	21 (48.84)	28 (45.90)	39 (51.32)	10 (35.71)	49 (47.12)
Very good (13-15)	12 (27.90)	15 (24.59)	19 (25.00)	8 (28.57)	27 (25.96)
Excellent (16-20)	3 (6.98)	6 (9.84)	7 (9.21)	2 (7.14)	9 (8.65)
Z [*] (Significance, p-value)	0.06 (Not significant, p > 0.05)		0.81 (Not significant, p > 0.05)		-
Knowledge (score)					
Poor (< 4)	14 (32.56)	9 (14.75)	17 (22.37)	6 (21.43)	23 (22.12)
Good (4-6)	28 (65.12)	50 (81.97)	57 (75.00)	21 (75.00)	78 (75.00)
Very good / Excellent (7-10)	1 (2.32)	2 (3.28)	2 (2.63)	1 (3.57)	3 (2.88)
Z [*] (Significance, p-value)	-2.11 (Significant, p < 0.05)		-0.19 (Not significant, p > 0.05)		-

Figures in the parentheses indicate percentages; * Z-tests were done between the respective average scores.

Regarding practices of personal hygiene among primary school children, a score = 0 corresponded to “never practicing / incorrect practice”; a score = 1, to “sometimes practicing”; and a score = 2, to “practicing most of the times / regularly”. Therefore, overall, the maximum and minimum possible scores, based on 10 indicators of personal hygiene as considered in this study, were 20 and 0, respectively. Poor score was considered to be a score < 8 (i.e. < 40%), and other scores categorized were good score 8-12 (i.e. 40-60%), very good score 13-15 (i.e. 65-75%) and excellent score 16-20 (i.e. 80-100%). Table I shows that 21 (48.84%) male and 28 (45.9%) female students obtained good scores. Likewise, 39 (51.32%) Hindu and 10 (35.71%) Muslim students obtained good scores. The difference between the average scores of male and female students, as well as that of Hindu and Muslim students were not significant statistically.

This Table also shows the knowledge of personal hygiene among primary school children. A score = 0 corresponded to “don’t know / incorrect knowledge”; and a score = 1, to “correct knowledge”. Therefore, overall, the maximum and minimum possible scores were 10 and 0, respectively. Poor score was considered to be a score < 4 (i.e. < 40%), and other scores categorized were good score 4-6 (i.e. 40-60%) and very good / excellent score 7-10 (i.e. 70-100%). It was found that 28 (65.12%) male and 50 (81.97%) female students obtained good scores. The average score obtained by the female students was significantly higher than that of the male students ($p < 0.05$). Equal proportion (75% each) of Hindu (57) and Muslim (21) students obtained good scores. There was no significant difference between the average scores of Hindu and Muslim students.

Table II shows that the proportion of primary school children having correct practices regarding combing hair, studying under adequate light, brushing teeth, washing hands before eating and trimming nails was significantly lower compared to the proportion of primary school children having correct knowledge on each of these indicators (48.08% vs. 74.04%, 8.65% vs. 40.38%, 50% vs. 65.38%, 84.62% vs. 96.15%, and 76.92% vs. 98.08%, respectively). Regarding wearing shoes, the proportion of primary school children having correct practice was significantly higher than the proportion of primary school children having correct knowledge (55.77% vs. 25%).

The proportions of primary school children having misconceptions regarding studying under adequate light (59.62% or 62 students), wearing shoes (75% or 78 students) and wearing clean clothes (85.58% or 89 students) were much more than the proportions of primary school children having misconceptions on other indicators of personal hygiene (ranged from 0.96% to 13.46%, or 1 to 14 students) (Tab. III).

Almost three-fourth of the primary school children (74.04% or 77 students) were suffering from one or more morbidities related to poor personal hygiene. The most common morbidity reported by them was diarrhoea (56.73% or 59 students), followed by fever with or without cough / cold (54.81% or 57 students), passage of worms in stool (45.19% or 47 students), head lice (40.38% or 42 students), scabies (39.42% or 41 students), dental caries (9.62% or 10 students) and multiple boils (7.69% or 8 students) (Tab. IV).

Among 71 primary school children with illiterate mothers, 18 students (25.35%) obtained poor score for practices of personal hygiene, whereas 42 students (59.15%) obtained good score and 11 students (15.50%) obtained

Tab. II. Distribution of students according to correct practice and correct knowledge of personal hygiene (n = 104).

Indicators of personal hygiene*	Correct practice (n = 104)	Correct knowledge (n = 104)	Z (Significance, p-value)
Combing hair	50 (48.08)	77 (74.04)	-4.21 (Significant, $p < 0.01$)
Studying under adequate light	9 (8.65)	42 (40.38)	-5.22 (Significant, $p < 0.01$)
Brushing teeth	52 (50.00)	68 (65.38)	-2.2 (Significant, $p < 0.05$)
Washing mouth after eating	64 (61.54)	75 (72.12)	-1.59 (Not significant, $p > 0.05$)
Washing hands before eating	88 (84.62)	100 (96.15)	-2.76 (Significant, $p < 0.05$)
Washing hands after visiting toilet	98 (94.23)	103 (99.04)	-1.87 (Not significant, $p > 0.05$)
Trimming nails	80 (76.92)	102 (98.08)	-4.52 (Significant, $p < 0.01$)
Taking bath daily	44 (42.31)	47 (45.19)	-0.41 (Not significant, $p > 0.05$)
Wearing shoes	58 (55.77)	26 (25.00)	4.43 (Significant, $p < 0.01$)
Wearing clean clothes	13 (12.50)	15 (14.42)	-0.4 (Not significant, $p > 0.05$)

Figures in the parentheses indicate percentages; * Multiple responses.

Tab. III. Distribution of students having misconceptions regarding personal hygiene (n = 104).

Misconceptions among students regarding*	Number (%)
Combing hair	1 (0.96)
Studying under adequate light	62 (59.62)
Brushing teeth	14 (13.46)
Washing mouth after eating	3 (2.88)
Washing hands before eating	4 (3.85)
Washing hands after visiting toilet	1 (0.96)
Trimming nails	2 (1.92)
Taking bath daily	14 (13.46)
Wearing shoes	78 (75.00)
Wearing clean clothes	89 (85.58)

* Multiple responses.

Tab. IV. Distribution of students according to morbidities related to poor personal hygiene (n = 104).

Morbidities related to poor personal hygiene* (history over last 15 days)	Number (%)
Fever with or without cough / cold	57 (54.81)
Diarrhoea	59 (56.73)
Passage of worms in stool	47 (45.19)
Head lice	42 (40.38)
Dental caries	10 (9.62)
Scabies	41 (39.42)
Multiple boils	8 (7.69)

* Multiple responses.

very good score. Among 33 primary school children with maternal education primary and above, only one student obtained poor score, whereas 7 students (21.21%) obtained good score and 16 students (48.48%) obtained very good score. Nine primary school children obtained excellent score and their mothers had middle school education and above. Statistically significant association was observed between practices of personal hygiene among primary school children and literacy status of their mother ($p < 0.001$) (Tab. V).

Discussion

The children of today will be the adults of tomorrow. By focusing on children today, by giving them tools and knowledge to change behavior, future generations can be stronger and healthier [1]. In the present study, it has been observed that the female students obtained significantly higher average score than the male students regarding the knowledge of personal hygiene.

This study shows that 98 (94.23%) primary school children washed their hands after visiting toilet and 88 (84.62%) washed their hands before eating. Also, 50 (48.08%) primary school children combed their hair, 52 (50%) brushed their teeth, 80 (76.92%) trimmed their nails, 44 (42.31%) took daily bath, 58 (55.77%) wore shoes and only 13 (12.5%) wore clean clothes. These observations clearly indicate that hygienic practices for

all the indicators of personal hygiene were not adequate among the study population. A study conducted in Philippines (1996) indicated that 71.4% school children washed their hands after using toilet and 75.9% washed their hands before eating. Also, 65.2% school children took daily bath and 63.8% wore slippers and shoes most of the time. Only 39.5% regularly trimmed their nails [3]. A study conducted by Dongre et al. (2006) among tribal school children in India reported that only 27.6% students (6-14 years) had clean and combed hair, 29.7% had clean and cut nails, 42.8% wore clean clothes and 33.8% had clean teeth before implementing the school health education program [4]. Another study by Dongre et al. (2007) in rural India documented that 63.6% school going children (6-14 years) had practice of hand washing with soap after defecation and 67.8% had clean and cut nails before initiating hygiene education [5]. A study done in rural Ethiopia by Vivas et al. (2010) shows that 99% of primary school children (mean age 10.8 years) washed their hands before meals, whereas only 15% washed their hands after defecation on the day prior to the interview [6]. Therefore, the present study and similar studies from the developing countries show that the practices of personal hygiene are not satisfactory among primary school children in the developing world.

The present study also shows that there was a wide gap between practice and knowledge regarding most of the indicators of personal hygiene. This finding corroborates with the study done in Philippines (1996) [3], as well as with a study by Oyibo (2012) done in Nigeria among school children aged 6-14 years [7]. It is quite expected that a lesser percentage of students having correct knowledge will be able to translate their knowledge into practice. This has been observed clearly in the present study, and this observation supports the principle of health education that knowledge does not necessarily lead to practice. In addition, lack of proper resources, i.e. soap and water, as well as inadequate sanitation facilities in a slum community with low socio-economic condition may negatively affect personal hygiene practices. Moreover, it has been observed that a good fraction of students have adopted to the right practices regarding some of the indicators, e.g. wearing shoes, without having correct knowledge on it. Even, misconceptions regarding the maintenance of personal hygiene were not uncommon among the primary school children, as observed in this study. This indicates that enhancement of knowledge is necessary, and the depth to which the knowledge is imparted to the students is not adequate. This calls for immediate attention of measures so that the knowledge is enhanced, as well the depth of knowledge is increased among primary school children. In this regard, the school teachers, parents and other family members could play a vital role. Even, children can also be the agents of change subsequently by spreading what they have learned in school to their family and community members. In this connection, the Total Sanitation Campaign (TSC) as launched by Government of India in 1999 worth acknowledgement. The TSC gave emphasis on personal

Tab. V. Distribution of students according to practice of personal hygiene and literacy status of mother (n = 104).

Practice of personal hygiene (score)	Literacy status of mother			Total
	Illiterate ^a	Primary ^b	Middle ^c and above	
Poor (< 8)	18 (25.35)	1 (5.55)	-	19 (18.27)
Good (8-12)	42 (59.15)	5 (27.78)	2 (13.33)	49 (47.12)
Very good (13-15)	11 (15.50)	12 (66.67)	4 (26.67)	27 (25.96)
Excellent (16-20)	-	-	9 (60.00)	9 (8.65)
Total	71 (100.00)	18 (100.00)	15 (100.00)	104 (100.00)

Figures in the parentheses indicate percentages; ^a *Illiterate*: Those who cannot read or write; ^b *Primary*: Grade I to IV. ^c *Middle*: Grade V to VIII; $\chi^2 = 36.7$, d.f. = 2, $p < 0.001$. Chi-square test was applied after classifying literacy status of mother as illiterate and literate (with education primary and above), and practice of personal hygiene as poor, good and very good / excellent.

hygiene, home sanitation, safe water, garbage disposal and wastewater disposal. It emphasized more on health education, human resource development, and capacity development activities to increase awareness and sanitation demand [1]. The TSC also laid strong focus on school sanitation and hygiene promotion. Among the main objectives of the TSC, accelerating sanitation coverage and promoting hygiene behavior among students and teachers are worth mentioning [8].

In this study, almost 75% of the primary school children were suffering from one or more morbidities related to poor personal hygiene. The most common morbidity reported by them was diarrhoea (56.73%), followed by fever with or without cough / cold (54.81%), passage of worms in stool (45.19%), head lice (40.38%), scabies (39.42%), dental caries (9.62%) and multiple boils (7.69%). These observations are quite similar to that of the study by Dongre et al. (2006) among tribal school children in India [4], where 56.6% students had diarrhoea, fever and upper RTI (respiratory tract infections), followed by head lice (42.8%), scabies (36.6%), multiple boils (8.9%), dental caries (8.3%) and history of worm infestation (28.9%) before implementing the school health education program.

In the present study, more than half of the primary school children (59.15%) with illiterate mothers obtained good score, followed by poor score (25.35%). Whereas, almost half of the primary school children (48.48%) with maternal education primary and above obtained very good score. Nine primary school children (8.65%) obtained excellent score and their mothers had middle school education and above. Only one primary school children (out of 33) with maternal education primary and above obtained poor score, whereas no primary school children (out of 71) with illiterate mother obtained excellent score. Statistically significant association was observed between practices of personal hygiene among primary school children and literacy status of their mother ($p < 0.001$). In this connection, it can be said that maternal education can play a vital role in the practices of hygiene and health among their children. As an illiterate or uneducated mother may be less knowledgeable about teaching her children proper personal hygiene practices. So, continuing health education program directed to the parents with a special emphasis on their role to improve the health habits of their children may hold promise.

The Author acknowledges the limitations of this study and implications for future improvement. First, the sample size was small. Second, the nutritional status of the children was not studied, which might be related to the state of personal hygiene as well as related morbidities. Third, morbidity pattern of the children was assessed by history and clinical examination. No attempt was made to perform any laboratory test, e.g. stool examination for parasites to detect the presence of any parasitic infection. These aspects need to be taken care of in future.

This study was undertaken among the primary school children in a slum area of Kolkata, India. The findings of the study might not corroborate with similar studies from non-slum areas of Kolkata, as the low socio-economic condition and the compromised living situation in a slum community along with inadequate primary health care services do not allow its people to adopt proper hygienic behavior and to observe good health.

Conclusions

It can be concluded from the present study that knowledge and practice of personal hygiene among the primary school children in a slum area of Kolkata, India is not satisfactory. Although, female students appear to be more knowledgeable than the male students. Sadly, knowledge and practice on all the indicators of personal hygiene are not commensurate and they are not equally good on all the indicators of personal hygiene among the primary school children. Even, misconceptions do exist on certain indicators of personal hygiene among the students. Students with poor hygienic practices mostly suffer from diarrhoea, fever with or without cough / cold, passage of worms in stool, head lice, scabies, dental caries and multiple boils.

Therefore, there is an immediate need for enhancement of knowledge among the primary school children, where teachers and parents can play a pivotal role. School-based health education program may be a useful effort in this regard. In this connection, the role of parent-teacher associations in all the schools should be emphasized. Maternal education appears to have a direct relation with the practices of personal hygiene among the primary school children. In this regard, not only the formal education, but continuing health education program of the parents by health workers, television and other me-

dias may also hold promise. Not only that, infrastructural development for proper maintenance of personal hygiene along with financial upliftment of the parents may go a long way so far educating the students and providing them with necessary resources and facilities are concerned. This in turn will help the students in adopting proper hygienic behavior. Government-NGO (non-governmental organizations) collaboration may also prove to be effective in achieving these goals.

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